



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

structural formulæ for certain silicate minerals which are most interesting if demonstrable.—Tiffany & Co., of New York, have just published an illustrated catalogue of their collection of rough diamonds which so admirably exhibits all the phases in the crystallography of this interesting mineral. The collection embraces 904 stones weighing over 1876 karats, of these twenty-two are in the rock.—Dr. Konrad Oebbeke,¹ of Munich, has published some studies made upon crystallized minerals found in the andesites of Mt. Dore in Central France. Hypersthene, hornblende and pseudo-brookite receive especial attention.—K. von Chrustschoff,² in the second part of his paper on secondary glass-inclusions finds that those observed in quartz fragments which have been imbedded in a liquid magma are due in all cases either to the infiltration of this magma into fissures or to the melting of some more easily fusible mineral which existed as an inclusion in the quartz before its imprisonment in the magma.—Professor Roland Irving, of Madison, Wis., in charge of the U. S. Geological Survey of the Archæan rocks of the Northwest, has just issued a most interesting paper on secondary enlargements of mineral fragments in certain rocks.³ A large number of observations show the widespread growth of rounded quartz grains by subsequent deposits of silica, which acts as their cement. This phenomenon, which was first described by Sorby and has since received considerable attention from A. A. Young, Irving, and others, plays a most important rôle in the change of sandstones to quartzites. The enlargement in the same manner of feldspar grains by secondary deposits of feldspar substance was recently observed for the first time by Professor C. A. Vanhise, of Madison, whose paper is appended to the present work. The facts described are illustrated by a large number of excellent colored plates.

BOTANY.⁴

BRANCHING OF *PTERIS AQUILINA*.—Much has been written on the structure of this well-known fern, but the relation of the fibro-vascular system of the stipe to that of the rhizome does not seem to have been traced. The widely-creeping rhizome *A* contains at the center two strong bands of sclerenchyma with two fibro-vascular bundles or rows of bundles between them, the whole surrounded by a ring of bundles much as in Fig. 1 *B*. In branching division occurs on a line crossing both bands of sclerenchyma, setting off to the branch a portion of both central bundles

¹ Bull. Soc. min. de France, 1885.

² Tschermak's Min. und Pet. Mitth., vis, 1885, p. 64.

³ Bulletin of the U. S. Geol. Survey, No. 8. Washington, Govt. printing office. 1884. (Price ten cents.)

⁴ Edited by Professor CHARLES E. BESSEY, Lincoln, Nebraska.

and of the outer ring, the divided bundle-ring afterwards closing up, leaving the arrangement the same as before.

If, however, the branch is to be a frond, a connection is soon formed between the two sclerenchyma bands, dividing both bundles or rows of bundles between them. The beginning of this connecting band is seen in Fig. 1 *B*, a section at the base of the stipe just above the point of attachment. When this connection is completed the bundles all lie in one continuous, though distorted ring, the enclosed sclerenchyma occupying the place of pith. From this point upward the band of sclerenchyma which lies on the anterior side of the stipe gradually diminishes

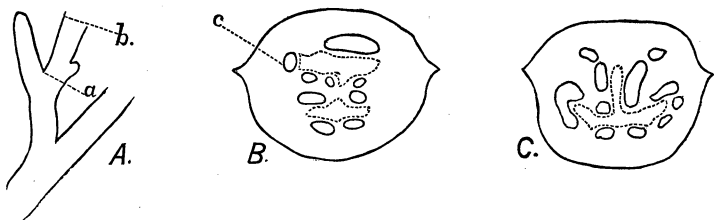


FIG. 1.—*A*, outline of a rhizome with base of stipe, *a-b*; *B*, a horizontal section at point *a*; *c*, a bundle which divides; *C*, horizontal section at the point *b*. The areas within the dotted lines are sclerenchyma, the others fibro-vascular bundles. *A* about one-half, *B* and *C* about twice natural size.

in size and finally disappears, while the one on the opposite side becomes broader, its edges bend forward and the bundles bordering upon it divide and increase in number. During these changes the front of the stipe becomes nearly flat and the back more convex, as in Fig. 1 *C*. Farther up all the sclerenchyma diminishes, and at the height of a few inches entirely disappears. The bundles, however, retain the same relative position and the pinnæ are given off right and left in the same manner as the branches of the stem.

In Fig. 1 *B* the bundle, *c*, divides and with part of the adjoining sclerenchyma enters the bud between *a* and *b* Fig. 1 *A*. In feeble plants this bud is suppressed and the branch at the left is reduced to a bud, so that the stipe then seems to arise directly from the main axis.—*A. A. Crozier, Ann Arbor, Mich.*

ATTEMPTED HYBRIDIZATION BETWEEN POND-SCUMS OF DIFFERENT GENERA.—In the latter part of May of this year, while examining a dish of material containing duckweeds (*Lemna polyrrhiza*) and various fresh-water algæ collected in Southern Nebraska, I came across a case of attempted hybridization between two pond-scums (Zygnemaceæ) of different genera, which is well worth recording. The plants concerned were *Spirogyra majuscula* and *Mesocarpus scalaris*, both rather common pond-scums of our ponds and ditches. The normal mode of conjugation in this *Spirogyra* is by means of short lateral branches which unite so as

to form free passages between the conjugating cells, and through these the protoplasm passes from the one cell to the other, resulting in the formation of a resting spore (zygospore). In Mesocarpus the process differs in this that the protoplasm from both the conjugating cells passes into the connecting tube and there forms a resting spore. In the latter case the resting spore is thus inter-filar, while in the former it is intra-filar.

The two plants lay parallel to one another, finally crossing, as shown in the figure. Near the point of crossing each plant sent out a characteristic conjugating tube. The tube from the Spirogyra was bent up and partly around the filament of Mesocarpus, while the tube of the Mesocarpus had pushed out against the Spirogyra filament with such force as to indent the latter very greatly.

The attempt at fertilization was futile, of course, and so no effort was made to keep the specimen alive. It was preserved in camphorated water and mounted upon a slide for further study and inspection.

We have in this case a suggestion of a reciprocal influence exerted by one cell upon another in the process of conjugation. It is probably a kind of sensibility to contact—an irritability, as the older vegetable physiologists would have called it. There was certainly a response to some influence on the part of one or other of these plants in the case before us. It is perhaps impossible to determine which plant took the initiative, whether the tube of Mesocarpus or of Spirogyra was first pushed out, but it is impossible to escape the conclusion that the second tube was pushed out in response to the first. It is possible that the first tube may have originally pushed out towards a filament of its own kind, and becoming displaced may have continued its growth towards the

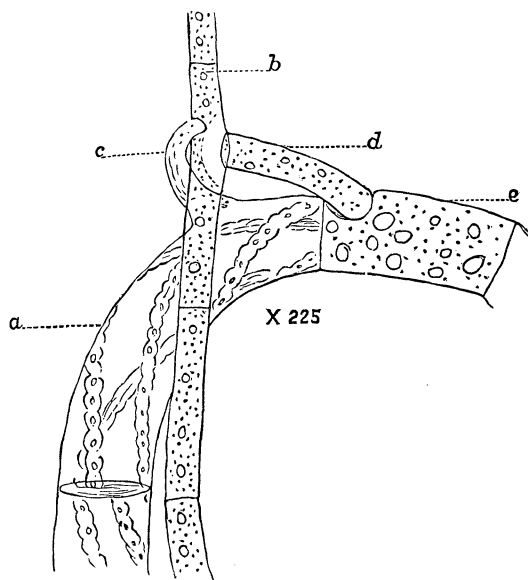


FIG. 1.—*a*, plant of *Spirogyra majuscula*; *b*, plant of *Mesocarpus scalaris*; *c*, conjugating tube sent out by Spirogyra; *d*, conjugating tube sent out by Mesocarpus; *e*, a dead cell of the Spirogyra plant containing parasites (*Chytridium* sp.).

stranger plant, exciting in it the production of a conjugating tube. I may say in conclusion that the position of the filaments and their appearance, under the microscope, precluded the supposition of an accidental juxtaposition.—*Charles E. Bessey.*

MORE POPULAR BOTANY.—A recently published little book, "Talks Afield," by Professor L. H. Bailey, adds another to the short list which this country as yet affords of readable scientific books on plants. We need not repeat here what we have said over and over again as to the duty of scientific men to prepare authoritative books which shall be written in non-technical language for the great non-scientific public. The author of the book mentioned has recognized this duty, and has given us a most readable as well as accurate volume. Twenty pages or so are given to a popular account of the greater groups of the vegetable kingdom, and then some of the most interesting features of flowering plants are taken up, as the flower, the stem, the rose family, the composite family, a peep at the inside, the sexes of plants, cross-fertilization, etc., etc.

We quote from pp. 74 and 75, as an example of our author's style: "The plant through its roots takes in various compounds which are dissolved in water. These compounds contain carbon, hydrogen, oxygen, nitrogen, sulphur, iron, potassium and other materials. The plant takes these solutions in through its roots by a modification of the phenomenon known to physicists as osmose, a sort of soaking-in process. The pressure exerted by the liquid as it comes into the root through this osmotic action forces the 'sap' upwards, but the chief cause of its rise is to be found in another fact: the stomata on the under surface of the leaves are open if the weather is clear and moist, and water is constantly evaporating from them. As fast as this evaporation takes place more water is needed. A demand is made upon the cells in the interior of the leaf which contain more water than those near the stomata, and as these interior cells lose some of their water they in turn call upon cells still more distant, and so on until the call is made all through the stem, and to the minute root-hairs which derive their water from the earth. This water does not flow upwards in tubes or cells, but it is soaked up through the thick walls of the wood-cells, and it keeps soaking upwards as fast as evaporation pumps it out through the leaves."

The publishers, Messrs. Houghton, Mifflin & Co., of Boston, have given the book a neat dress, and sell it for the reasonable price of one dollar.

THE BOTANICAL CLUB OF THE A. A. A. S.—There should be a good attendance of botanists at the meeting of the American Association for the Advancement of Science in Ann Arbor (August 26th to September 2d). Arrangements have already been made for excursions at low rates to the very interesting

Mackinac and Lake Superior regions. Botanists who are anxious to add to their collections can do so, and at the same time take a most enjoyable steamboat voyage upon the great lakes.

But let us ask here that the botanists do something to redeem the scientific reputation of their profession. It was a noticeable fact that for the greater part the papers presented by the botanists before Section F, last year, were characterized by far less depth than those which came from the other biological workers, the zoölogists. Is there a necessary reason for this in the nature of the two sciences, botany and zoölogy? Or is it a difference in men? May it not be due to a difference in habits of thought? Have not the botanists for so long thought of discovery as connected with new species that they have forgotten that there may be room for brilliant discovery in structural and physiological fields also?

Let our botanists prepare good thoughtful papers for Section F, and at the same time lay by numerous notelets for the Botanical Club, which will have frequent meetings during the association week. The club is intended to take in the shorter notes and lighter discussions which cannot properly find place in the section meetings.

BOTANICAL NEWS.—Centuries xiv and xv of Ellis' North American Fungi made their appearance a couple of months ago. The first is composed of miscellaneous plants of general interest. Century xv is devoted to the parasitic fungi, and contains seventeen species of *Peronospora*, seven of *Uromyces*, thirty-two of *Puccinia*, seven of *Entyloma*, besides many *Æcidia* and other imperfect forms. This volume is one of the most interesting yet published.—M. C. Cooke's *Præcursores ad Monographia Polyporum*, begun in the March *Grevillea*, is continued in the June number, the list reaching the 411th species. It is the intention of the author "to publish, in a collected form, all the scattered descriptions of the species known."—The last number of the *Journal of Mycology* contains a monograph of our species of the genus *Ramularia*. Work of this kind is much needed, and the new journal is doing good service in undertaking it.—Dr. Geo. A. Rex contributes a valuable and interesting paper to the *Botanical Gazette* (June) upon the Collection and preservation of the *Myxomycetes*. It will repay every collector to give the paper a careful reading.—The Report on Forestry, Vol. iv, 1884, prepared by N. H. Egleston and published by the Department of Agriculture, is exceedingly disappointing. The contrast between this volume and that of about the same size, lately issued by Professor Sargent, on "The Woods of the United States," is characteristic. It seems to be very difficult to get first-class work done in some of the government departments. Why cannot our officials learn that when they want a scientific problem investigated they must appoint *scientific* men to do the work.—

As an earnest of better methods we are glad to note the appointment of E. L. Scribner as assistant botanist to the Department of Agriculture. He has been assigned the care of the cryptogamic portion of the herbarium, and will devote most of his time to the study of the parasitic fungi, especially those which affect injuriously the field and garden crops.—The April number of *Nuovo Giornale Botanico Italiano* contains an exhaustive paper, by Danielli, upon the structure of *Agave americana*. It is illustrated by seven large plates containing eighty-one figures.

ENTOMOLOGY.

THE BLACK, WHEAT-STALK ISOSOMA (*ISOSOMA NIGRUM*, n. sp.)—Early last autumn I received from Mr. Wm. Deyo, of Denton, Wayne county, Michigan, specimens of wheat straw which contained from five to sixteen larvæ of a four-winged (hymenopterous) fly. The portion attacked was usually near a joint, but might be anywhere along the internode, and was found above every joint, though very rarely above the highest one. The immediate region of attack was creased and deformed (Fig. 1),



FIG. 1.—Black dots show exit of fly.

though not swollen, and was very hard, so that to cut it, except with a very sharp knife, was difficult. At this portion of the stalk, which was usually from three centimeters (one and a-fifth inch) to five centimeters (two inches) long, the straw was not hollow but solid throughout. By cutting into this deformed straw the yellowish-white larvæ were found in oval cells. These cells were about four millimeters (.16 of an inch) long. I published an account of this fact in several papers of Michigan and other States (see *Country Gentleman*, Vol. 49, p. 817) asking for further information. In response to these inquiries I received several communications from Wayne and Washtenaw counties, Michigan, in both of which the insect worked extensively.

So far as I can learn the insect has never been noticed before; and as the hardened pieces of straw break off in thrashing and come out of the machine with the grain, their presence could hardly escape attention. Mr. I. S. Vandervort, of Ypsilanti, Michigan, to whom I am indebted for many specimens, says the attack was quite general in Washtenaw county, and that the short straws in the grain had been noticed and commented upon by many farmers who had not even mistrusted that insects had anything to do with it. At our Farmers' Institute held at Plymouth, in January, I found hardly a farmer who had not been vexed by the small pieces of straw, yet not one had discovered the cause.

In the *Country Gentleman*, Vol. 49, p. 857, Professor J. A. Lintner refers to similar attacks of wheat in New York, and says the cause is the same species that has done so much damage in